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The harbor of Los Angeles. The city is dimly visible at the base of the distant hills and is about twenty-four miles from the harbor. The dock in the foreground is a half-mile long.

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THE JOURNAL OF GEOGRAPHY

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VOLUME XXVII MAY, 1928 NUMBER 5

THE GEOGRAPHY OF SYRIA

BESSIE L. ASHTON
University of Illinois

INTRODUCTION

The region bordering the eastern end of the Mediterranean Sea is of unusual interest to the geographer. In fact, it may be said that no other equal area in the world has been of so much significance to mankind as this. Lying, as it does, near the junction of three continents, it has been the transit ground for conquering armies and peaceful commercial caravans from time immemorial. It has been called the bridge to Africa and the key to Asia. From the productive land of Mesopotamia extend two of the most important trade routes known, one westward over the Syrian steppe to Alexandretta on the Mediterranean; the other thru Damascus and Palestine to the Nile. Because of its strategic position this region has been conquered repeatedly, the last time in 1517 by the Mohammedan Turks, under whose rule it remained until the Great War. At the present time it consists of two political units, the northern portion, or Syria proper,* a French mandate, and Palestine, the British mandate.

THE CLIMATE OF SYRIA

Climate is the most important element of the physical environment, in so far as human adjustment to this region is concerned. The coastal region of Syria has the typical Mediterranean climate with mild, rainy winters and hot, dry summers. Inland and in the lee of high mountains the rainfall decreases until the true desert is reached.

The winds in Syria are very regular, and, fortunately, westerly winds prevail, bringing moisture to the land in winter and mitigat-

* The eastern boundary of Syria as shown on the map is that of the desert margin, rather than that of the French mandate.

ing the heat of summer. North winds, which bring a dry cold, are much less frequent, and the dreaded sirocco, or south wind, is still less common.

Temperatures vary greatly with latitude, altitude, and exposure to winds. In certain sheltered valleys opening to the Medi-

terranean there is little variation from month to month. Plateau regions, on the other hand, experience a considerable seasonal, as well as daily, range. In low, undrained regions malaria abounds.

The amount and yearly distribution of rainfall is most significant. Practically no rain falls during the warmest four months,

making agriculture at this season dependent on irrigation and drouth resistant crops. The heavy showers of winter erode the loose soil from slopes and turn some of the meadows into lakes. In the limestone regions the water drains away quickly, but gives rise later to copious springs at the bases of slopes, as at the foot of Mt. Hermon. High westward facing slopes receive heaviest rainfall, lee slopes and inland areas the least. The annual precipitation in the Lebanon is 45 inches, while Damascus has about 12.[1] Snow falls on the highlands during most winters, but it remains long only in the highest altitudes. On Mt. Hermon it remains all but a few weeks in summer, and supplies water to the streams for irrigation.

GEOGRAPHIC PROVINCES

Northern Syria

The chief significance of Northern Syria is as a thorofare between the East and the West. In this respect it is more important than the rest of the country, as caravan routes from Mesopotamia and southern Armenia can reach the coast with less difficulty in this latitude thru easy mountain gaps. One of these ancient routes is now appropriated by the Bagdad Railroad, which connects Aleppo with the Cilician plain via the modern city of Islahia and the Bogtche, or Amanus Pass, over the Amanus Range, or, rather, thru it, by means of a three mile tunnel.[2] A second route passes thru Aleppo from the east and over the Amanus Range by the Beilan Pass, or the Syrian Gate, 2,395 feet high, to Alexandretta. It is estimated that no less than 180,000 loaded camels come over this route into Alexandretta each year, bringing sheep's butter, wool, skins, dried fruits, etc.[3] The natural outlet of Northern Syria, and one of considerable importance in ancient times, was via Antioch to the port of Seleucia, but the value of this route is much impaired by the deposit at the mouth of the Orontes, and trade formerly passing this way now goes by way of Alexandretta or Beirut, both of which have more satisfactory harbors.

These mountain gaps are also of importance in admitting the rainbearing winds from the sea far into the land, permitting culti-

[1] Handbook of Syria, Geographical Section of the Naval Intelligence Division, Naval Staff, London, p. 350

[2] Ellen Churchill Semple, The Ancient Mesopotamian. Piedmont Route, *Geographical Review*, 8; 1919, p. 157

[3] Dr. Arthur Ruppen, Syria: An Economic Survey, p. 79

vation as far east as the Euphrates. The native vegetation resembles that of Asia Minor, and the position of this area in relation to that region has also made it a connecting, as well as a transit, land for Arab and Turk, Kurd and Armenian. Nowhere else in all Syria can one find such variety in towns and streets, such bushy and water-filled ravines, so moderate a summer, or such a heavy snowfall as here.[4]

The Orontes-Kara Su lowlands suffer from the disadvantage of being poorly drained. The low gradient of the rivers, together with seasonal floods, gives rise to reedy swamps and moorland, infested with malaria during much of the year. Much of the lower Orontes valley is cultivable, however, and today grain and cotton fields and olive and fig orchards stretch from the well-covered borders ever farther toward the low marine plain in the center. A circle of towns, interrupted by plots of licorice plants, extends over the southern and eastern part. The unhealthful coastal conditions of the region have naturally retarded the development of Antioch, the chief city, which exports licorice root and grain.

In the wide east-west ridges of the Kurd Mountains on the northern border of Syria are well watered and cultivated valleys. Vegetation covers well the mountain sides where exposed to the west winds, but becomes gradually scantier and poorer toward the east. In spite of the lack of low passes and the presence of trails only, the mountains are crossed by an important trade route from Biredschik on the Euphrates to the Cilician plain. On it lies Aintab, which is also the junction point of the routes from Marasch to Aleppo and from Alexandretta to Djarbekr. This position gives the city greater significance in trade than as a center for the surrounding region in whose valleys fields of grain and orchards are found, or for its manufactures. Killis is the key to the southern part of the mountains and the station on the shortest road between Biredschik and the sea. On slopes protected from the north wind are olive orchards, and on the lowering southwest spur fruit and olive trees, as well as fields.

The Aleppo Plain is a rolling tableland, gradually descending in altitude to the south and east, and consequently becoming more and more arid. Bare basalt ridges, between whose broken blocks scanty vegetation takes root, follow, one after another, and on the south a series of them separate the plain from the Bedouin steppe.

[4] Ewald Banse, Die Turkei, p. 327

Cultivation is limited by the amount of water available, the best parts being the well cultivated and inhabited areas between Killis and the Euphrates, and east of Aleppo. In this region cultivation has been increased westward and extended eastward by the location of the Bagdad railroad.

In the hilly land between the Kurd Mountains and the Euphrates olive orchards, vineyards, and grainfields are found. Farther south the region is treeless, villages become less numerous, and the uncertainty of agriculture increases until it is finally confined to only a few favored places. Shepherds with their flocks of sheep or goats wander over the area between the towns, whose little life-giving streams betray their presence by silhouettes of thin rows of fruit and poplar trees.

For the most part this is a region of interior drainage, the small streams losing themselves in the sands or in salt swamps. The largest and most important river is the Kuek in the western part, a river rich in fish and lined with many mills for which its waters furnish power. Its wooded banks lie like a green band in the desert, and on it is Aleppo in the middle of a flat rock-hill girdled valley in which pastures and fields alternate. The lower course of the stream terminates in the reedy and swampy lake of El Madch, which dries out in summer and is exploited for salt. Similar to El Madch is El Sebcha, which is turned into an expansive salt swamp by the surplus irrigation water which drains into it. From this salt pan the inhabitants obtain not only salt, but also potash for soap making.

Aleppo is the most important city in this region, not so much because of the flourishing agricultural and livestock industries which form the basis for its existence, as for its situation at the crossing of important trade routes. Today trade in licorice, sheep's butter, wool, olive oil, lambskins, hides, fabrics, and dried fruits from the steppe, and gallnuts and dyes from Kurdistan, totaling about 20,000,000 marks annually, pass from here over the Beilan Pass to Alexandretta.[5] The industries of the city, which has a population of about 250,000, are based on local materials, and include weaving of silk fabrics, embroidery, soap making, and leather working.

[5] Banse, op. cit., p. 331

Steppe Syria

Because of the high unbroken western range, which effectually cuts off much of the rainfall from the remaining area, the steppe in central Syria approaches closer to the sea and encroaches more on the cultivable land than elsewhere. The region is characterized by a sparse population and relatively poor development.

The coast range rises in natural terraces from the coast to an elevation of 3,000 feet in the main ridge, thus affording excellent conditions for agriculture, but taxation under Turkish rule discouraged utilization of more than a small part of the land. This range is Syria's least known and least developed area. Besides a great variety of grains, vegetables, and fruits for local use, large quantities of silk cocoons are produced for export, and the best tobacco in all Syria grows on the hills near Latakia, the chief port.

The barren limestone mountain east of the Orontes in this latitude permits some agriculture in the valleys, while the drier ridges that stretch out toward the north and northeast provide scanty sheep pastures for the farmers and the Bedouins.

The Orontes lowland between the two ranges is mostly swamp and pasture land, peculiarly favorable for the rearing of the water buffalo. It is subject to fever, however, and during the heat of summer the few half-Bedouin farmers who inhabit it are driven to the mountains by swarms of large mosquitoes which then infest it.

East of the Orontes River and south and east of the eastern range are wide treeless plains stretching between and around the isolated mountain groups from which water is obtained, some of them being exceptionally fertile and thickly settled with towns. In one such plain is Idlib, the center of the chief cotton producing region of Syria. Because it is more open to the west there is more rain in the Hama and Homs district and agriculture can be carried on without irrigation. The fine pasture of these plains gives rise to an important livestock industry. Cattle, horses, asses, mules, camels, sheep, and goats are raised. During the time of spring pasture the Bedouins of the eastern desert and the Euphrates valley also penetrate the region to pasture their flocks and to sell their products in one of the larger markets. Aleppo, Homs, and Hama are the chief centers of the wool trade, and nearly all the products from both sides of the Euphrates are sold in them.[6] Se-

[6] Handbook of Syria, op. cit., p. 353

men, a kind of native butter, is brought packed in skins, and sold in Aleppo and Hama during April, May, and June. The amount for a normal year is from 570 to 900 tons. Homs lies on the road from Hama, and is a market for grain and raw sugar from a large producing region roundabout. It is also at the focus of roads which follow the Orontes and Kebir valleys from the north, south, and west. Railroads from Beirut, Tripoli, and Aleppo meet here, and the caravan route from Tadmor.

East of these productive plains the steppe prevails with its hidden water-holes and nomadic inhabitants. It consists of low tablelands, faulted into horizontal steep-edged platforms and traversed by numerous wide, crooked wadis, very similar to northern Arabia and separated from it by a distinct series of horizontal stair-like terraces. At the block border water issues as springs from the lower strata, or can be obtained by deep wells. Along this escarpment runs an old caravan route, which connected Der E' Sar on the Euphrates with Damascus, Hama, and Tripoli. The trade of ancient times brought wealth to Palmyra, which was located at a break in the edge of the upper plain, making relatively easy passage from one level to the other. Water could be obtained, also, tho its quality was poor. The gray clay huts of the present town of Tadmor lie between the stones and pillars of the ruins of this ancient city. The half-agricultural Arabs who inhabit it gain subsistence by cultivating date gardens and obtaining salt from a nearby salt pan. All this region suffers from lack of good water. Warm and sulphurous springs issue from the floor of the plateau at Tadmor, and the water from the few deep wells is brackish. Ancient Palmyra overcame this handicap by bringing water by aqueduct from the Orontes.

Central Syria

Central Syria consists of the high and rugged western range of the Lebanon, the lower eastern range of Anti-Lebanon, which converges at the south on Mt. Hermon, the rift valley between the two ranges, and the Damascus Plain.

The Lebanon is the name applied to the rough and mountainous country along the Mediterranean from the Kebir to the Litany River. It is the highest (up to 10,000 feet), the most rugged, and the most imposing part of the maritime range. The eastern slopes are steep and precipitous, and, for the most part, unsuited to occu-

pation. The western slopes, tho cut by many wild and rugged gorges, are studded with villages, which lie in irrigated valleys where luxuriant growth fringes the streams. Practically the entire population is found here. Wherever soil is found the rocky slopes have been terraced at great expense of time and labor, giving an aspect of a vast system of mountain steps with fronts of dry stone wall. By means of canals along the sides of ravines, water is conducted to the mulberry trees and vineyards by which the seemingly barren mountain sides are transformed into veritable hanging gardens. Wheat grows to an elevation of 6,000 feet, vines from 3,000 to 5,000 feet, and olives somewhat higher. The principal culture, however, is that of the mulberry, which is grown for the production of silk cocoons. Because of the great amount of labor involved, the area under cultivation thruout the mountains is relatively small. Grain crops are sufficient for home consumption only in exceptional years. On the small, but fertile, coastal plain cereals, olives, oranges, and lemons are grown. Weathering of the limestone strata and the black volcanic rock constantly renews the soil, so that it is exceptionally rich and requires little fertilizing. Pasturage is good, but not abundant, mulberry leaves being used for fattening stock. The once splendid forests have been denuded of their best trees and the famous cedar groves have been reduced to about 400 trees, now carfully protected from the goats by a high stone wall. The climate is salubrious and families are large. Wars have been few, for an Oriental country, in this rough land, and Turkish oppression, thanks to the rugged surface and to French intervention in 1860, has been felt less than elsewhere in Syria. The result is a prosperous and populous land, compared to the rest of the country. Of the two and one-half million people of Syria living outside the cities, about one-fifth are in the Lebanon, or about 88 per square kilometer, as against 10 for Syria as a whole. As a consequence of this overpopulation, emigration has been heavy to the United States, Mexico, Argentina, Brazil, and even to Australia and Japan. It is estimated that about a half million Syrians live outside the country, and much money is sent or brought back to the Lebanon by these people.

The mountain system of Anti-Lebanon consists of four chains converging south on Hermon, the most conspicuous mountain in this part of Syria. In its highest altitudes (up to 9,700 feet),

Mt. Hermon is bare and stony, and snow-capped much of the year. Its lower slopes are fertile with the mixed limestone and volcanic soil as in the Lebanon, and are fairly well watered and well wooded on the south. Cultivation is patchy, however, on both Hermon and Anti-Lebanon, on whose west slopes are found gardens, vineyards, and orchards up to 5,000 feet in elevation. In the poorly watered lee of these mountains the desert in places lies close.

The rift valley reaches its highest point, 3,600 feet, at the watershed of the four important streams of Syria, the Jordan, Litany, Orontes, and Barada rivers. It is a fertile, but not too well watered tract as far north as Baalbek, where the plain is flooded in winter, and in summer retains water from the uplands at a depth of from three to four feet below the surface. This furnishes luxuriant pasture for the flocks and herds of the nomadic Bedouins, who frequent the place. As it supplies arable land and pasture, a lack in the highland areas on either side, it is of great importance to both of them. It is not an ideal habitat, however, as cold winds occasionally sweep the plain in winter, and fever is prevalent in summer.

Below the barren and shadeless slopes of Anti-Lebanon lies the alluvial plain of Damascus. It is watered by the Barada River, which rises in the heart of Anti-Lebanon, distributes its water to the plain thru seven mouths, and disappears in a large marsh. The plain lies close in to the foothills of Anti-Lebanon, between one of its spurs on the north, Mt. Hermon on the west, a row of extinct volcanoes on the east, and the Awaj River on the south. Besides the city of Damascus, it supports eighty villages, with their orchards and gardens, and several towns. It is Syria's garden spot, practically every agricultural product grown in the country being found here. Damascus is a border market of the desert, seventy miles from the sea and remote from natural lines of commerce, but it has the reputation of being the oldest city in the world. It is on the utmost edge of fertility, a harbor of refuge from the desert, and indispensable alike to civilization and to the desert nomads. Three great roads lead out from it, one across Palestine to the Nile, one south over the lava plateau to Mecca, and one east to Bagdad.

THE FUTURE OF SYRIA

In the future the wealth of Syria must be based upon its pastures and its agriculture, as it is today. Other resources are very meager. The forests have been largely removed, and mineral resources are almost entirely lacking. In agriculture, too, the handicaps are many. On the mountains the soil is coarse and porous and too thin for other than grain or flat-rooted trees. Crops are frequently injured by drouth, and sometimes by locusts. The soil needs fertilizing, but the fellah is too poor to buy commercial fertilizer, and scattered pastures and use of dung for fuel prevents accumulation of animal manure for the land. Industries are based upon local materials almost exclusively. The most important is textiles, including silk spinning and cotton weaving, and dyeing. The Lebanon is the center for silk spinning, but this industry has suffered from competition with Chinese and Japanese silk. The olive industry, which is scarcely able to supply local needs, received a setback during the war, when many of the trees were destroyed by the Turkish Government for railway fuel. Flour milling is widely scattered, the old handmills still being found in every village. Water power is used where available. Damascus, because of its good water supply and nearness to the Hauran (See map), has long been the center of the milling industry, but the Hedjaz railway, which favors the transportation of grain to the coast, is causing a decline. It is also becoming increasingly difficult for local mills to compete with imported flour from Australia and America.

In the rehabilitation of Syria many things need to be done. Greater terracing of slopes would retard soil erosion and increase the cultivable area. With irrigation extended, as near Homs and Hama, the dried fruit industry, for which the climate is admirably adapted, could be greatly increased. Drainage of the Orontes and Kara Su valleys would not only increase the area of arable land, but would improve health conditions. There are certain handicaps, however, that are difficult or impossible to overcome. Competition with other areas will continue, as in silk spinning and flour milling. The land needs fertilizer, which is very difficult to obtain, as lack of fodder, and the small market for dairy products handicap the dairy industry, and the peasant is too poor to buy commercial fertilizer. Drouth conditions must be met repeatedly, where water for irrigation is not obtainable, and manufacturing will continue to be ham-

pered by the lack of coal. More important than all, however, is the menace of the bordering desert. For all time to come, if present conditions of aridity continue, this region will be endangered by incursions of the marauding Bedouins, which no government is likely to be able to control. Good government and attention to sane economic principles will do much to rebuild the country, but it will be a long process, and delimited by comparatively unchangeable geographic conditions. In the future, as in the past, Syria's primary contribution to the world will be as thorofare and entrepot between the East and the West, due to its geographic position between them.

SOME ACHIEVEMENT TESTS ON THE GEOGRAPHY OF SYRIA

The following study questions on the material presented by Bessie L. Ashton in "The Geography of Syria" were prepared by Nancy M. Waters and Evelyn Barrows, teachers of geography in the Whittier Junior High School, Lincoln, Nebraska, and are suggestive of the types that may be used with similar material printed in texts or in the *Journal of Geography*. A perfect score in the tests is 100. After the tests have been completed turn to the textual material and score your own paper.

I. A Completion Test

Introduction and Climate

Directions: Read to "Geographic Provinces," look up the meaning of words you do not know and all place geography. Now read the selection a second time and complete the following statements:

Syria formerly belonged to ..... Now the northern part is a mandate of ....., and Palestine is a mandate of ..... This country lies at the ..... end of the Mediterranean Sea, and it is, therefore, called the bridge to ....., and the key to ..... Two well known trade routes from ..... extend thru Syria. Agriculture is dependent on ..... because rain comes in the .....season, brought by ..... winds. In the .... the annual rainfall is 45 inches but in ..... it is 12 inches. The coast may be said to have a ..... climate but inland the true ..... is reached. Water is supplied for irrigation in summer by snows on Mount .....

Score, number right .....

II. A Correct Word Test

Northern Syria

Directions: Read the descriptions of "Northern Syria" only. See if you can answer the following questions. Place the correct answer in the parentheses following the question.

Do you know:

1. The name of the railroad following an ancient thorofare thru Northern Syria? (.....)
2. A mountain range thru which a tunnel passes? (.....)

3. The terminal of a second route which passes thru the Syrian Gate? (.....)
4. A port of importance in ancient times? (.....)
5. A river with deposits at its mouth? (.....)
6. The principal city of this region at the present time? (.....)
7. An important export of the city? (.....)
8. The name of the mountains on the northern border of Syria? (.....)
9 A city on the Cilician Plain which is the junction of two important trade routes? (.....)
10. The key to the southern part of the mountains? (.....)
11. A plain which is a rolling tableland? (.....)
12. An important product of the hilly lands between the Kurd Mountains and the Euphrates Mountains? (.....)
13. The chief occupation of the dry regions? (.....)
14. A river which furnishes power? (.....)
15. The important city of the plains region? (.....)
16. The lake in which the lower course of the river terminates? (.....)
17. A mineral obtained from the swamps in the summer time? (.....)
18. The population of the leading city? (.....)
19. A manufactured product of the city? (.....)
20. The principal reason for the city's importance? (.....)

Score, number right .....

III. A MULTIPLE ANSWER TEST

Directions: Read the textual material on "Steppe Syria" and then underline the word which makes the statement correct.

1. This region is characterized by a population which is dense, sparse, foreign.
2. The conditions for agriculture from the coast to the main ridge of mountains are poor, excellent, fair.
3. A small part of the land is used because of aridity, taxation, boulders.
4. From this region is produced for export large quantities of fruits, grains, silk.
5. The chief port of the steppe region is Hama, Latakia, Idlib.
6. The limestone mountains east of the Orontes River are barren, grass covered, forested.
7. The lowland between the two ranges is suitable for rearing sheep, cattle, water buffalo.
8. The center of the chief cotton producing region of Syria is Idlib, Aleppo, Homs.
9. In the summer the half Bedouin farmers are driven to the mountains by heat, mosquitoes, floods.
10. In the Hama district the rainfall makes possible the animal industry, lumbering, horticulture.
11. Aleppo, Homs, Hamma are the chief centers for the trade in fruit, grain, wool.
12. Railroads from Beirut, Tripoli, and Aleppo meet at Damascus, Homs, Alexandretta.
13. The steppe region east of the productive plain is similar to northern Arabia, southern Turkey, Persia.
14. Water is obtained by means of irrigation, deep wells, pipes from sea.
15. The city of Der E' Sar is located on the Mediterranean, Euphrates, Orontes.
16. The trade of ancient time brought wealth to Tripoli, Hama, Palmyra.
17. The city which lies within the ruins of the ancient city is Tadmor, Jaffa, Idlib.

18. The inhabitants who cultivate date gardens here are Turks, Jews, Arabs.
19. All this region suffers from the lack of sufficient food, good water, comfortable homes.
20. Ancient Palmyra brought water from the Orontes River by pipes, buckets, aqueduct.

Score, number right .....

IV. A TRUE-FALSE TEST

Central Syria

Directions: Read the textual material and then place a "T" before the statements which are true, and an "F" before those which are false.

(....) 1. Central Syria is made up almost entirely of lowlands.
(....) 2. The Lebanon is the highest of the maritime ranges.
(....) 3. Practically the entire population lives on the western slopes.
(....) 4. Irrigation is used in growing mulberry trees.
(....) 5. Wheat can be grown at a higher altitude than olives.
(....) 6. Sufficient grain is raised for home use.
(....) 7. The mulberry is grown for the production of silk.
(....) 8. Central Syria is over populated and about half a million Syrians live in other countries.
(....) 9. There have been many wars in this country.
(....) 10. Many Syrians live in the United States.
(....) 11. Mount Hermon is the most conspicuous mountain in this part of Syria.
(....) 12. Syria has only two important streams.
(....) 13. The nomadic Bedouins find luxuriant pasture for their flocks in the South.
(....) 14. The Plain of Damascus is watered by the Barada River.
(....) 15. Damascus is the only city on this plain.
(....) 16. Damascus is considered the oldest city in the world.
(....) 17. The city is 100 miles from the sea.
(....) 18. Three great roads lead out from the city.
(....) 19. The famous cedar groves of Syria have been reduced to 200 trees.
(....) 20. Mulberry leaves are used for fattening stock.
(....) 21. The soil is fertile on the coastal plain.
(....) 22. Each Syrian farmer tends many acres of land.
(....) 23. The Western side of the Lebanon has been terraced.
(....) 24. Syrians have emigrated to Australia.
(....) 25. The alluvial plains of Damascus produce nearly every product grown in the country.

Score, Number right minus number wrong
Right — Wrong = Score .....

V. AN ASSISTED MEMORY TEST

The Future of Syria

Directions: Read the "Future of Syria" and then fill in the blanks with the assistance of the words listed at the end of this section.

The future wealth of Syria must be based upon its .....(1)..... and .....(2).....
On the mountains the soil is .....(3)..... and .....(4).....
The .....(5)..... have been largely removed.
The soil needs .....(6).....
The Lebanon is the center for .....(7).....

Many of the ....(8)..... trees were used for railroad fuel during the war.
.....(9)..... is the center of the milling industry.
The silk industry has suffered from competition with .....(10)..... and .....(11)..... silk.
It is difficult for the local mills to compete with imported flour from ....(12)..... and .....(13).....
Drainage of the .....(14)..... and .....(15)..... valleys would increase the area of arable land.
Manufacturing is handicapped by lack of .....(16).....
The menace of the bordering .....(17)..... is the greatest difficulty.
Syria's primary contributions to the world will be as .....(18)..... and .....(19).....between the East and West.
The poor people are called .....(20).....

Score, number right .....

pastures	American	silk spinning
Orontes	Kara Su	fertilizer
Australia	coal	Damascus
entrepot	thorofare	Japanese
fellaheen	agriculture	olive
porous	Chinese	desert
forests	coarse	

A METHOD OF TEACHING LARGE GEOGRAPHICAL AREAS

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I. THE PROBLEM OF AREAS

Brazil is nearly four times larger than Greenland, and South America is over eight and one-half times larger than Greenland, and yet, if you will look at a map of the world on Mercator's Projection you will see that Greenland looks to be larger than South America. Shall we abandon Mercator's Projection? Certainly not; neither should we allow pupils to get false ideas of comparative areas of the world. There should be in the geography room, not rolled up in closets, but where they are easy of access, world maps on several projections, such as Mercator's, Homolographic, Interrupted Homolographic, Lambert's Azimuthal, etc. A brief presentation of projections by the use of these maps and globes will be interesting and valuable to the pupils in the upper grades and will clear up many false conceptions.

As it is, school children have almost no idea of size of geographical areas, such as states, countries and continents. Adults are probably little if any better than elementary pupils in this respect. Just how much of this is due to faulty geography teaching is unknown, but undoubtedly good geography teaching can improve conditions. We need a working knowledge of comparative sizes.

Map study is an important part of the study of geography but it should be taught comparatively. Area must be carefully studied. Area is one of the eight components used to determine the rank of the countries by Rugg and Hockett in their "Objective Studies in Map Location," published by the Lincoln School of Teachers College. Seven of the eight criteria were weighted the same, or one. The other criterion was weighted three. So, as far as countries are concerned, area counts one-tenth in determining their importance.

Area was one of the six criteria used by Branom and Reavis in ranking the fifty-two countries of the world (1915).

II. WHY MAPS ARE MISLEADING

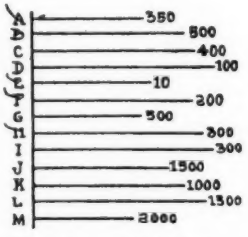
Geography maps are misleading because hardly any two maps in any of the best textbooks are on the same scale. Figure I shows the scales of statute miles of thirteen different maps in a widely used geography. In Figure I, Map E, the line represents 10 miles, while the shorter line in Map M, represents 2,000 miles. Figure II shows the scales of twelve consecutive maps in another of the best and most widely used geographies. The lines opposite Map 1 and Map 2, in the second figure, each represent 500 miles, but one line is much longer than the other. Figure III shows the size the maps would be if they were drawn to the same scale. The lines opposite the first two maps under Figure III are now the same length because they represent two maps both drawn to the same scale. Of course it would be unwise to have all geography maps on exactly the same scale. Home territory should be enlarged and smaller features displayed; but undoubtedly there could be some improvement over the present disparity. At any rate, the teacher can counteract the evil effects of difference in map scales, by teaching the relative sizes of the most important regions.

Figure IV shows the relative areas of Pennsylvania and Wyoming, the latter being more than twice as large as the former.

WHY GEOGRAPHY MAPS ARE MISLEADING

SCALE OF STATUTE MILES

MAPS SCALES



13 DIFFERENT SCALES FOR 13 MAPS IN THE SAME GEOGRAPHY

FIGURE I

THE SCALE OF 12 CONSECUTIVE MAPS IN ONE OF THE BEST, AND MOST WIDELY USED GEOGRAPHIES

MAPS SCALES

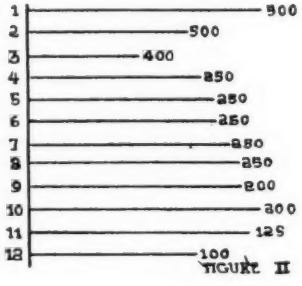


FIGURE II

IF THE TWELVE MAPS WERE DRAWN TO THE SAME SCALE

MAPS EQUAL SCALE

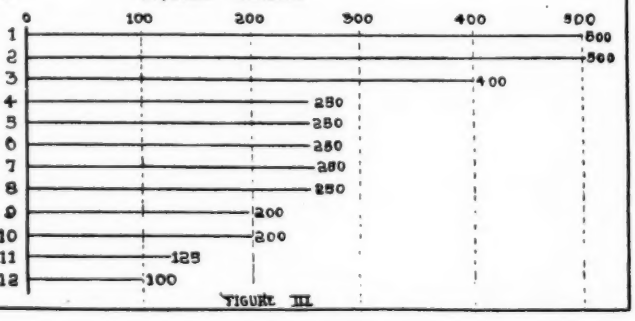
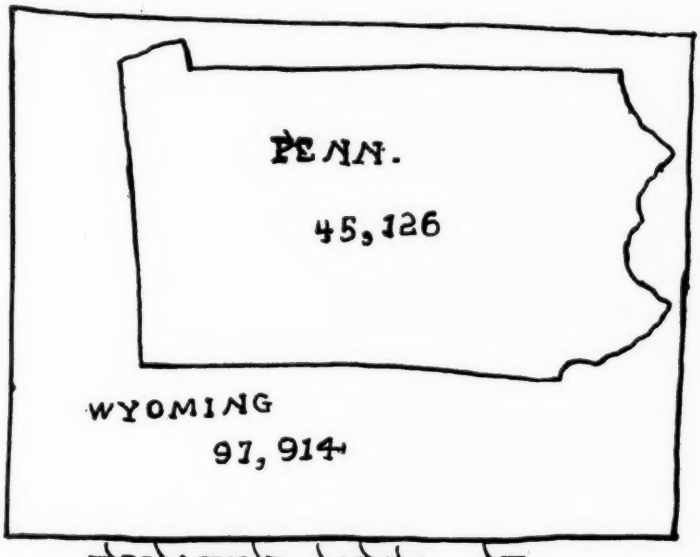
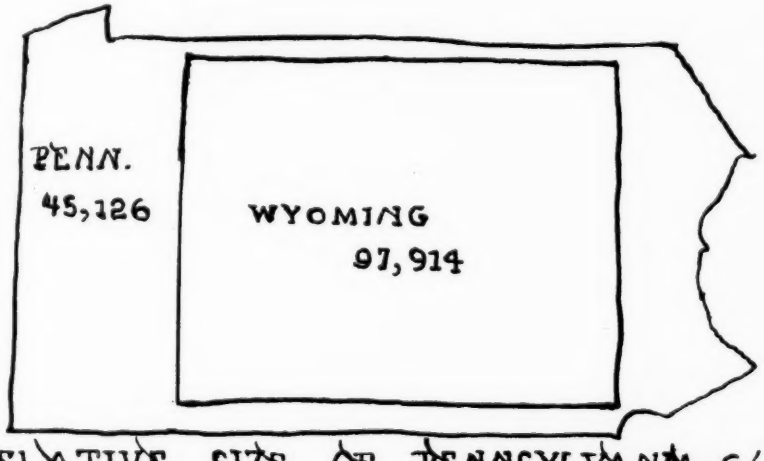


FIGURE III



RELATIVE AREA OF PENNSYLVANIA & WYOMING
FIGURE IV



RELATIVE SIZE OF PENNSYLVANIA & WYOMING IN ONE OF THE FOUR BEST GEOGRAPHY TEXT-BOOKS
FIGURE V

Figure V shows the relative size of the maps of these two states in one of the best geographies. The map of Wyoming is only one-half as large as the map of Pennsylvania. Such discrepancies are found in all the textbooks on geography.

FIGURE II

Figure VI is a type of outline map which teachers should learn to draw on the blackboard and have the pupils draw in their note-books. Rhode Island is roughly outlined inside of the outline of New Jersey; the latter inside of Ohio, and Texas outside of Ohio. These four maps make a good scale of measures to apply to the

other states and to countries. The square mile is too small a unit of measure with which to compare states and countries.

A pupil looks up the areas of France and Germany and finds them to be 212,700 and 181,200 square miles, respectively. No child can visualize 200,000 square miles. One square mile is objective, but when we get up to the size of states and countries, the mile is such a small unit that its objectivity as far as the pupil's imagery is concerned has shrunk to almost nothing.

III. Comparative Map Studies

There is a tendency in the newer geographies to print one outline map superimposed over another. Why not go one step further and teach areas of all regions and sections by a comparative method?

It is impossible for average persons to remember the size of many countries in square miles, for example—that the United States has an area of 3,026 thousand square miles; Canada has an area of 3,729 thousand square miles and Mexico, 767 thousand square miles. It is much simpler to understand the size of Texas and then remember that the United States is about 11 times larger than Texas, and Canada is 14 times larger than Texas, and Mexico is nearly 3 times larger than Texas. From these last comparisons the pupil can be made to realize that the United States and Mexico together just about equal Canada in area.

Turkey and Texas are about the same size. Scotland and South Carolina are about of a size. New Hampshire and Vermont differ but little in area and both together are just a little larger than Denmark. Bulgaria and Ohio are almost exactly the same in area.

New Jersey is a small state (8,224 square miles) and a pupil may easily traverse it by automobile in one day and so get some idea of its size. Ohio is five times the size of New Jersey and Texas is 6½ times the size of Ohio. Let us then choose Ohio as a unit of area, and measure all the other states and the countries in terms of Ohio. Table I gives the area of the states in square miles; and also in terms of Ohio. Connecticut has an area of 4,965 square miles. In terms of Ohio, Connecticut is only .12. That is, the ratio of Ohio and Connecticut is 1 to .12. Massachusetts is .2 or one-fifth the size of Ohio. Minnesota is 2.06 or about twice the size of Ohio. Table II groups the states by sizes.

TABLE I

SIZE OF THE UNITED STATES IN TERMS OF OHIO AS A UNIT (41,040)

State	Area in sq. miles	In terms of Ohio	State	Area in sq. miles	In terms of Ohio
Alab.	51,998	1.27	Neb.	77,520	1.89
Ariz.	113,956	2.78	Nev.	110,690	2.70
Ark.	53,335	1.30	N. H.	9,340	.23
Calif.	158,297	3.86	N. J.	8,224	.20
Colo.	103,948	2.53	N. M.	122,634	2.99
Conn.	4,965	.12	N. Y.	49,204	1.20
Del.	2,370	.06	N. C.	52,426	1.28
D. C.	70	.001	N. D.	70,837	1.73
Fla.	58,666	1.43	Ohio	41,040	1.00
Ga.	59,265	1.44	Okla.	70,057	1.71
Ida.	83,888	2.04	Ore.	96,699	2.36
Ill.	56,665	1.38	Pa.	45,126	1.10
Ind.	36,354	.89	R. I.	1,248	.03
Iowa	56,147	1.37	S. C.	30,989	.76
Kan.	82,158	2.00	S. D.	77,615	1.89
Ky.	40,598	.99	Tenn.	42,022	1.02
La.	48,506	1.18	Texas	265,896	6.48
Me.	33,040	.81	Utah	84,990	2.07
Md.	12,327	.30	Vt.	9,564	.23
Mass.	8,226	.20	Va.	42,627	1.04
Mich.	57,980	1.41	Wash.	69,127	1.68
Minn.	84,682	2.06	W. Va.	24,170	.59
Miss.	46,865	1.14	Wis.	56,066	1.37
Mo.	69,420	1.69	Wyo.	97,914	2.39
Mont.	146,997	3.58			

TABLE II

GROUPS OF THE UNITED STATES BY SIZES

I Under 10,000 sq.mi.	II 10,000 to 25,000 sq. mi.	III 25,000 to 50,000 sq. mi.	IV 50,000 to 75,000 sq. mi.	V 75,000 to 100,000 sq. mi.	VI Over 100,000 sq. mi.
Conn. .12	Md. .30	Ind. .89	Alab. 1.27	Ida. 2.04	Ariz. 2.78
Del. .06	W. Va. .59	Ky. .99	Ark. 1.30	Kan. 2.00	Calif. 3.86
D. C. .001		La. 1.18	Fla. 1.43	Minn. 2.06	Colo. 2.53
N. H. .23		Me. .81	Ga. 1.44	Neb. 1.89	Mont. 3.58
N. J. .20		Miss. 1.14	Ill. 1.38	Ore. 2.36	Nev. 2.70
R. I. .03		N. Y. 1.20	Iowa 1.37	S. D. 1.89	N. M. 2.99
Vt. .23		Ohio 1.00	Mich. 1.41	Utah 2.07	Texas 6.48
Mass. .20		Pa. 1.10	Mo. 1.69	Wyo. 2.39	
		S. C. .76	N. C. 1.28		
		Tenn. 1.02	N. D. 1.73		
		Va. 1.04	Okla. 1.70		
			Wash. 1.68		
			Wis. 1.37		

U. S. 3,026,789, exclusive of outlying possessions.
In terms of Ohio 73.753.

In terms of Texas $\frac{73.752}{6\frac{1}{2}} = 11.35$.

Table III shows six groups of European countries according to sizes. The numbers at the right denote the size of each country in terms of Ohio. While three decimal places are used in the table, it is best not to use any in case of large countries, one decimal place with the medium sized countries and two decimal places in case of the smallest group, for example: Italy, 3; Ireland, .8; Andorra, .01.

TABLE III

GROUPS OF EUROPEAN COUNTRIES, ACCORDING TO SIZE

Under 10,000 sq. mi.		10,000 to 25,000 sq. mi.		25,000 to 50,000 sq. mi.	
Wales	.181	Latvia	.609	England	1.239
Luxemberg	.024	Esthonia	.448	Greece	1.196
Danzig	.018	Albania	.433	Bulgaria	.969
Andorra	.005	Denmark	.404	Iceland	.967
Malta	.003	Switzerland	.389	Hungary	.874
		Netherlands	.322	Portugal	.865
		Belgium	.286	Ireland	.794
		Turkey in Europe	.265	Austria	.789
				Scotland	.741
				Lithuania	.731
No. in each group	5	8		10	

50,000 to 75,000 sq. mi.		75,000 to 100,000 sq. mi.		Over 100,000 sq. mi.	
Czechoslovakia	1.320	Jugoslavia	2.341	Russia	33.528
				France	5.182
				Spain	4.746
				*Ukraine	4.239
				Sweden	4.216
				Germany	4.415
				Poland	3.653
				Finland	3.230
				Norway	3.037
				Rumania	2.973
				British Isles	2.967
				Italy	2.914
No. in each group	1	1		12	

Europe 3,761,200 sq. mi. In terms of Ohio 89.454

In terms of Texas $\frac{89.454}{6\frac{1}{2}} = 13.76$

Numbers above columns denote sq. mi. Numbers at the right of the countries denote size in terms of Ohio.

*Also included under Russia.

Texas is 6½ times larger than Ohio and makes a suitable unit for measuring the countries of the world.

Table IV gives the rank order of the twenty countries ranking the highest, by Rugg and Hockett, the area in square miles, and the area in terms of Texas. Mexico is nearly 3 times larger than Texas. The United States is a little over 11 times larger than Texas. Canada is 14 times larger, China is 16 times larger, Russia is more than 30 times larger than Texas.

By multiplying the area in terms of Texas by 6½ we may get

TABLE IV

AREA OF THE TWENTY COUNTRIES RANKING THE HIGHEST BY RUGG AND HOCKETT

Rank	Country	Area in thousands of sq. mi.	Area in terms of Texas	Rank	Country	Area in thousands of sq. mi.	Area in terms of Texas
1	United States	3026.	11.375	11	Canada	3729.	14.018
2	France	212.	.796	12	Poland	124.	.466
3	Germany	185.8	.698	13	Egypt	360.	1.353
4	China	4277.	16.078	14	Greece	41.9	.157
5	Great Britain	88.4	.332	15	Spain	190.	.714
6	Russia	8166.	30.699	16	Belgium	11.7	.043
7	Japan	149.	.560	17	Ireland	32.5	.122
8	Italy	117.9	.443	18	Mexico	767.	2.883
9	India	1803.	6.778	19	Rumania	122.	.458
10	Turkey	282.	1.060	20	Hungary	35.6	.133
	Texas					266.	1.000

the approximate area in terms of Ohio. For example, the ratio of Texas and Greece as given in the last column to the right of Table IV is 1 to .157; multiplying by 6½ gives a ratio of 1 to 1 for Ohio and Greece. This shows that they are approximately the same size.

The technique involved in this proposed method of teaching large geographical areas is very simple, and it is believed that it will aid the teachers in helping the pupils to get a better and more lasting conception of this phase of geography.

Some Other Exercises Suggested by This Article

1. Construct a tabulation similar to Table I involving the twenty-five largest cities of the United States using Dallas, Texas (200,000) as a unit of measure.

2. Make a corresponding tabulation for the large lakes of the world using one of the Great Lakes as a unit of measure.

3. Select ten consecutive maps from your text and according to the scale of each map draw a line on paper or on the blackboard for each may representing 1000 miles. Why do these lines vary in length?

4. Using the areas given in the appendix of your text, figure out how much larger the United States is than Alaska. According to a Mercator map how do the two seem to compare in area? How do you account for the discrepancy?

5. Why can a uniform scale of miles not be applied to a Mercator Map?

6. What advantage would it be to have the maps of the continents in your texts on the same scale?

7. Why is it not always convenient to construct maps of the continents and of states on the same scale?

8. How does the plan suggested in this article help to correct wrong impressions gained thru the use of maps on many different scales?

9. Why is the homolosine map better for a study of comparative areas than is the Mercator?

10. Why is a state or a country better as a unit of comparison for measuring large areas than is the square mile?

E. E. L.

THE STRUGGLE TO RENDER THE PANAMA ZONE HEALTHFUL

ESTELLA EVERETT
Edgewood, Maryland

For centuries, no single strip of land has borne such an evil fame as the Isthmus of Panama. It is a damp, tropical jungle, intensely hot, swarming with mosquitoes, snakes, alligators, scorpions and centipedes. Colon and Panama—the terminal cities—were not attractive with their dirty, crooked streets, unsanitary conditions, and people living in miserable thatched huts. It was apparently a hopeless tangle of tropical vegetation, swamps whose bottoms the engineers had not discovered, black, muddy soil, quicksands, intercepted now and then by a tall mountain or crossed by rivers that rose sometimes twenty feet in a night. This vegetation was a mass of palm trees, banana trees, mangroves, trailing vines, bamboos and cottonwoods. Chattering monkeys, shrill parrots and parrakeets filled the trees; wild turkey, wild boar and wild hogs swarmed the tall grass, and poisonous snakes, great lizards, tarantulas, and all manner of reptile and insect life covered the oozy ground. All kinds of tropical flowers bloomed there all

the year and its orchids, growing luxuriantly near the tops of the tall trees, lured more than one collector to his doom. When the water was turned into Gatun Dam, collectors had wonderful times collecting orchids by rowing around the tops of the trees and gathering the most beautiful.

YELLOW FEVER AND MALARIA

The chief terror of the Isthmus had been its reputation for yellow fever and malaria. The whole forty miles was one swelter-

FIG. 1 D Street, Colon, Republic of Panama, looking south, December, 1908. Photo, Courtesy The Panama Canal

ing miasma of death and disease. Yellow fever had made it an object of terror in all parts of the world. Ship captains had the most explicit instruction for approaching Panama and ship passengers always displayed nervousness and fear as they sailed into the harbor of Colon. The cemeteries of Panama and Colon are full of the bodies of Americans, Englishmen, Frenchmen and Spaniards—all victims of this disease. This was a common saying, "There are two seasons at Panama. First the wet season lasting from the middle of April to the middle of December, when people die of

yellow fever in four or five days. Next the dry or healthy season when people die of pernicious fever in from 24 to 36 hours." The records of all the consulates at Panama contain stories of the ravages of disease. It was not an infrequent thing for officials to take coffins with them when they went to Panama.

CHARACTERISTICS OF THE ZONE

The tangle of vegetation is often so dense that one can penetrate it only by cutting a path thru the living wall. The damp heat of the tropical forest creates a barrier to human movements by causing a growth of dense forest thru which travel is almost impossible. Because of its exhausting effect upon human energy, transportation is difficult thru such forests. If a road is made, it must be cut back very frequently, and if travel is attempted without a road the traveler encounters swamps, dense thickets and huge projecting rocks. Therefore the inhabitants use the products near by and make no attempt to produce or gather more than is needed for their own consumption. Life is relatively easy—the cocoanut and banana furnish food with little work, clothing is a luxury, the shelter little more than a thatch of palm leaves set on a rude frame of poles, usually raised several feet above the ground to keep out the hordes of rats and to eliminate some moisture. The chief occupations are collecting food, occasional primitive cultivation with the hoe, and some hunting. The means of communication are the horse, the mule and the ass. The type of civilization is poor, due not only to the climate but to the race and the absence of good governmental, religious and educational facilities and influences, and little communication with outside peoples. This country has two seasons—the dry season when the rainfall is between 20 and 40 inches and the rainy season during which time over 80 inches of rain falls. At times the rain comes in sheets, as much as 5.8 inches falling in an hour. The Charges River often rises 25 feet in 24 hours. The prevailing winds from the east bring the moisture. During the dry season the northeast trade winds sweep with such intensity across the Isthmus between 9:00 A.M. and 3:00 P.M. that even horses find it difficult to keep their footing. The mean temperature for the year is around 80°; but, because of the low pressure area and the great humidity, the heat is almost unbearable for persons from higher latitudes. Consequently the country has been left almost entirely to the natives—

a mixture of Indians, Negroes, Spaniards and Jamaicans. The population before the United States entered the Isthmus was 8 to 16 per square mile. Now it is 256.

NOT ALONE AN ENGINEERING FEAT

From the day when Balboa crossed the Isthmus and gazed on the Pacific, the linking of the two oceans has been one of the greatest dreams of civilization. Two mighty seas separated by

FIG. 2 A Canal Zone street scene showing quarters, Silver Employees, La Boca. Photo, courtesy The Panama Canal.

only forty miles of land! Yet the greatest engineering brains of Europe had spent more than twenty years in attempting to unite the two oceans, and only failure had resulted. America acquired the Panama Zone, a strip of land ten miles wide, across the Isthmus, lying between 9° and 10° North Latitude and about 80° West Longitude, or a fraction farther east than the eastern coast of Florida. By 1904 America was ready to take up the challenge of building a connecting link between these two oceans. There was one man, however, who knew that American wealth, American engineering skill and American energy would not in themselves

accomplish this great work. This was the quiet but farseeing Army doctor, Dr. William Crawford Gorgas, who, drawing from his experience in Havana, knew that the mosquito would have to be reckoned with. The constant rains and warmth make Panama a paradise for mosquitoes, and it had been proven that mosquitoes spread yellow fever and malaria.

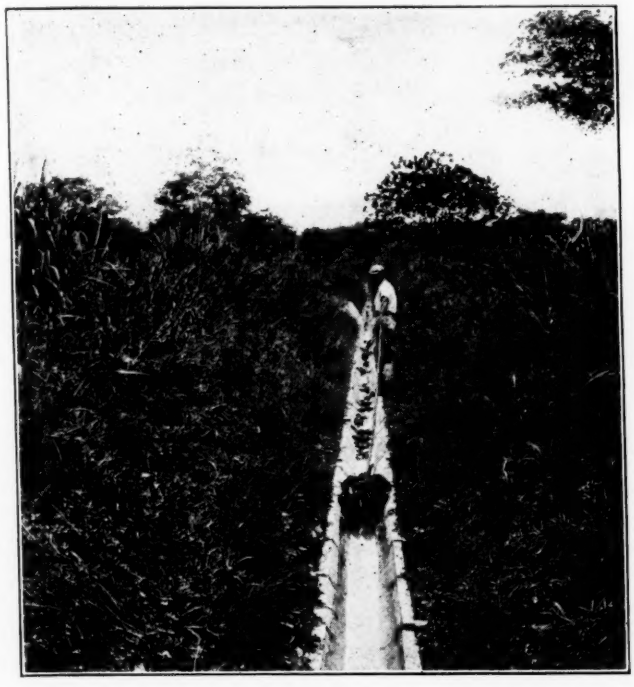


FIG. 3 Mosquito Control. Cleaning and oiling ditch with rope mop. Photo, courtesy The Panama Canal.

PRELIMINARY EXPERIMENTS

At the beginning of the twentieth century a small group of army doctors, and soldiers, and nurses, who were in Cuba during the outbreak of yellow fever volunteered to sleep for twenty nights in rooms packed with the clothing of yellow fever patients. It had been thought that such a risk meant catching disease and probable death. Not one of this group caught yellow fever. Their experiment proved that the disease is not contagious. They then allowed themselves to be bitten by the Stegomyia mosquito in order to have scientific proof that it is the means by which the disease is spread. Dr. Jesse W. Lazear was one of those who watched this mosquito,

after having bitten a yellow fever patient, settle on the back of his hand and inject the poison. Five days later he had yellow-fever, from which he died. Only a few years before this, it had been proven that malaria is not due to damp or polluted air, but is communicated by the bite of the Anopheles mosquito.

The French enterprise had failed, not because of graft and inefficiency as was commonly supposed, but because of the terrible ravages of yellow fever among the workmen. In one year the French lost 22,000 men. Being ignorant of the fact that mosquitoes spread disease they put bowls of water under the legs of the beds in the Panama hospitals to prevent insects from annoying the patients. These bowls became breeding places for the Stegomyia mosquitoes and the hospitals thus became an effective agency for spreading the disease.

WORK OF DR. GORGAS

Dr. Gorgas was appointed as the sanitarian in charge of the work, and spent two years familiarizing himself with the problems presented by the Isthmus. When he inspected it in 1904 there were no signs of yellow fever, and there had not been a death from this disease for several years. He was not deceived by this condition. The population at Panama at that time, consisted almost exclusively of its own people; there were practically no strangers in the Zone. Yellow fever is a disease that feeds exclusively upon strangers; the native population is invariably immune.

Dr. Gorgas, because of his experience in Cuba, and his knowledge of the origin of yellow fever, believed that by exterminating the mosquities in the Zone it could be made safe for the building of the Canal. The Isthmusian Commission, however, was hard to convince. The head of the Commission, John G. Walker, an Admiral in the American Navy, thought that the French had failed because of graft, and was determined that economy should characterize the work of building the Canal. He had also studied the scientist's ideas of the Stegomyia mosquito and reached his own conviction; it was all nonsense. Altho not famous for a keen sense of humor, the idea that there was anything dangerous in the bite of a mosquito stirred him to uncontrollable mirth. To spend good American dollars on a group of insane enthusiasts who spent all their time chasing mosquitoes thru Panama jungles seemed to him an extreme form of official folly. The French, in

their wildest moments, had never done anything as bad as that! On a trip to Washington in 1904 Dr. Gorgas spent much of his time in pleading with Admiral Walker for sulphur, pyrethrum powder, wire screening, crude oil, inspectors and all the things the people needed in fighting disease. The Admiral refused. He believed that yellow fever was caused by filth and that by cleaning up Panama and Colon yellow fever would be exterminated. In vain the doctor told him how Havana had been scrubbed and scoured only to have yellow fever break out more furiously than before. General W. Davis, the first Governor of the Canal, believed, too, that the fever was caused by filth, and gave Gorgas' plan no encouragement.

Culmination of the Disease

All this time Gorgas was terribly worried. As each ship dumped its human cargo at Colon, he renewed his efforts with a stupid officialdom. He knew that yellow fever was coming—that with the arrival of this great body of non-immunes it was inevitable—but he was almost powerless to prevent it. The blow fell in November, with a case here and there, constantly increasing until by the early part of the year every one realized that a full-sized epidemic was under way.

The rush to get away from the Zone soon assumed the proportions of a panic. Men went as fast as transportation could be secured. The effect upon the workers at the Isthmus was deplorable. In everybody's mind was the story of the French. Newspapers in every state greatly exaggerated the situation which was sufficiently serious in reality. Politicians and editors who had denounced the Panama route as impossible regarded the epidemic as a vindication. The real meaning of this epidemic was that the United States could not build the canal. The fate of the whole performance, in the early part of 1905, lay in the hands of one man. Could Gorgas destroy yellow fever? If so, the Canal could be built. At last he was given full rein.

The Sanitary Department was divided into three heads—Quarantine, Hospital and Sanitation Divisions. The first two had been fully taken care of, and now Dr. Gorgas bent all his efforts toward perfecting the last.

DRAINING THE ZONE

The water supply of the Canal Zone had consisted entirely of rain water, which was stored thru the dry season in tanks, cisterns, and receptacles of all sorts, affording ideal breeding places for mosquitoes. An aqueduct from the mountains was now put in, which gave an abundant supply of pure water, and sewers were installed to carry off waste. Provisions were made for paving streets, and thus disposing of thousands of puddles of water which also afforded breeding places for mosquitoes. The elimination of breeding places was carried further by draining or filling swamps and marshes, and by oiling stagnant pools with crude oil to form a surface film which cut off the air supply of the mosquito larvæ. At one time 65,000 gallons of oil per month were used. Banks of streams were cleaned of brush and grass, cutting vertically to allow access of small fish which fed on the larvæ of mosquitoes. Some ditches were burned over. Where this was possible it was the best method because where sides of ditches are burned and then treated frequently with crude oil, vegetation does not grow again for a long time. The Sanitary department cut 16,000,000 square yards of brush. It also filled and drained 1,000,000 square yards of swamp land. A distance of 200 yards around all settlements was drained, stagnant pools oiled regularly, and the doors and windows of all buildings screened.

PROGRESS OF THE FIGHT

All infected mosquitoes were destroyed by fumigation of the rooms and houses. They also destroyed adult mosquitoes thru catching them by hand with glass tubes, and by traps. The houses were completely screened and a screen cage was also placed around patients in hospitals.

During 1905 the deaths grew fewer and fewer—the work of Gorgas was getting the upper hand. One day in December, 1905—after sixteen months of fighting disease—Gorgas announced to a group of surgeons that they had seen their last case of yellow fever in Panama. Over twenty years have passed, and there has been no death of yellow fever in Panama—not even a single case of that disease. Yellow fever has vanished from a region in which it had been endemic for 400 years.

Malaria is even more important than yellow fever, on account of the tremendous disability caused by it. While the percentage

of fatalities is not nearly so great as from some other tropical diseases, the amount of incapacity caused by malaria is greater than all the others.

In 1912 Gatun had probably the greatest influx of mosquitoes in its history; they came by thousands. The Gatun Lake was rising, and it was not known whether these mosquitoes came from there or not. The Sanitary Department determined to locate all the breeding places for mosquitoes near Gatun, catch mosquitoes at each place and after painting them turn them loose and determine by the color of the mosquitoes caught in Gatun from what point they came. Mosquito bars were suspended from limbs, and when full of mosquitoes sprayed with color. Various baits were used and at one time a Jamaican Negro, upon being asked about it replied, "Yes, Boss, that was the easiest money I ever made. Ten cents an hour for sitting there and doing nothing but just inviting the mosquitoes in." It was found that the largest breeding place was off to the west of the locks in an old swamp which had previously given no trouble. Recently salt water had been pumped into the swamp and this mixture caused the mosquitoes to breed by the trillions. In one year 3,148 pounds of quinine were used for malarial patients. In 1913 the malaria among employees was 19 per 1,000, including colored laborers, transients and those whose work requires residence in unsanitated areas.

THE RESULTS

The cost of sanitation was about 1 per cent per capita per day for the total population, or about $4,000,000.

Various nationalities were experimented with as laborers in the Zone. It was found that Italians and Spaniards did not possess great vitality and quickly succumbed to tropical fevers. The Jamaican Negroes were found to be the best for resisting disease. In fact they were hard to kill. The Jamaican's work was estimated to be one-third that of a man in the temperate zone. It took four of them two days to dig a post hole four feet deep and two feet square in soft dirt. A white man painted a house in 1¾ days. It took 7 Negroes four days to paint a duplicate house.

Panama, for centuries a pest hole, has become one of the healthiest places in the world and the Canal a reality. The Canal Zone is a health resort. Not only is the mosquito a rarity, but the house fly also. The water supply is sanitary to its very source,

many miles away in the mountains. The whole Zone is inspected on the average of once a week and woe betide the housekeeper who does not live up to regulations. The Ancon Hospital, one of the finest in the world, and several smaller hospitals are located in the Zone. When a native becomes ill he is required to enter a hospital, free of charge, where he will receive necessary attention. So good is the health of the Zone that recently an order from Washington, carrying out part of an economy program, asked that the expense of the sanitary work in the Canal Zone be curtailed until the death rate should approach that of the average of the States.

A succession of trim villages, whose inhabitants enjoy comfortable, screened houses, wholesome food from refrigerator cars, pure water from the mountains, fresh meat and milk, stand where formerly existed only a jungle.

THE TEACHER-MADE SLIDE MAP AND ITS USES

LILLIAN A. WILCOX
Buffalo, New York

The pictorial slides and slide maps sold in sets by various companies have been a great help in stimulating the teaching-learning process. Occasionally teachers have desired a slide map of a certain region that her set did not contain or that she cannot buy. Moreover some school systems do not supply slide maps. What are these teachers to do? Make their own slide maps.

There are several ways of making slide maps. The method suggested requires materials that are inexpensive and easily obtained; the technique outlined is very simple; the same slide glasses may be used many times.

THE MATERIALS REQUIRED

1. Slide cover glasses (cost thirty cents a dozen).
2. One box of slide binders (cost fifteen cents for fifty).
3. One china marking or Kramic black pencil (cost fifteen cents).
4. A few small red seals or stars.

TO MAKE AN OUTLINE SLIDE MAP

1. Choose a map from any geography that is small enough to fit into the area of the slide.

2. Lay the glass on the map and with a finely pointed Kramic pencil trace the outline carefully. Do not lift the pencil, if possible.
3. Place another glass on top of the crayoned outline and bind with the black strip.
4. Paste a seal or star on the lower right hand corner of the slide to serve as a guide in placing it in the lantern.

It is not necessary to cover and bind the slide if the map is for temporary use only, but for permanent equipment the method suggested is more satisfactory. The crayon markings can be removed with warm water and a soft cloth, and the glass re-used.

How to Use an Outline Slide Map

The slide maps are to be projected on the blackboard if a daylight lantern is used. Otherwise use the white curtain and change the procedure which follows to meet the changed conditions.

In Location of Continents. In presenting a new continent for the first time the map may be projected on the blackboard. Have the children open their texts to the map of the same continent. Locate the new region by having the children write in their correct places on the blackboard the names of the various bodies of water that touch the continent. The children may draw in and number in degrees the parallels of latitude that mark the northern and southern extent of the continent. If the children are familiar with the longitude, the meridians may also be drawn. Follow this by an oral summary, having the child point to the map as he talks. (This same procedure may be modified to use in studying a new country.)

In the Study of Coastlines. The successive use of several outline maps of various continents makes a comparative study of coastlines possible. While it is evident that Europe has an irregular coastline, the rapid comparison (that the use of slide maps makes possible) with Australia and Africa will make the irregularity more noticeable.

After the children have learned that an irregular coastline makes good harbors and seaport cities possible, allow the children to check places on the blackboard projection where they think a good harbor and a seaport may be found. Reference to a political map and the text should follow to verify the inference.

In Review or Drill Work. Project the slide map on the blackboard and use it as the basis of review or drill work in locational geography.

Have the children number from one thru ten on a slip of paper. Teacher places "1" on the slide map projection of the United States where New York City is located. Children write on their papers the name of the city in that location. Follow the same procedure for other cities. These are suggested:

1. New York
2. Philadelphia
3. Detroit
4. Duluth
5. New Orleans
6. Galveston
7. Seattle
8. San Francisco
9. Los Angeles
10. Buffalo

After the children have completed the list check results. Follow this by the statement of some geographical fact of importance connected with the city or the reasons why the city grew where it did. Isolated locations have no place in modern geography.

The device may be used to test a pupil's knowledge of the location of rivers, boundary waters, and countries.

In Providing Individual Blackboard Maps for the Children. Use the slide outline map to place ten or twelve chalked outline maps of any region on the blackboard. Project the slide on the board and trace the outline with chalk. Shift the lantern so another map may be drawn. Continue until there are as many outline maps on the blackboard as are needed. Send the slower children to the board to work on these outlines. Allow the other children to do the same work on individual maps at their seats. This procedure makes it possible for the teacher to check the errors of the slower children as soon as they are made.

CONCLUSION

These slide maps are quickly and easily made. Other ways in which they can be effectively used will suggest themselves to the teacher as she tries out the uses included here.

SUMMER COURSES IN GEOGRAPHY

The following educational institutions sent data of summer school work in geography.

University of California, Berkeley, Calif. July 2-August 11

Introduction to Geography: Natural and Cultural Regions. Associate Professor Richard Russell

Geography of Europe. Professor Albrecht Penck (University of Berlin)

Geography of California. Associate Professor Russell

Seminar: Status and Potentials in Land Utilization. Professor Albrecht Penck

University of Colorado, Boulder, Colo. June 18-August 24

General Geology (Either Term). Warren O. Thompson
Field Geology (Either Term). Warren O. Thompson and William D. Thornbury
Historical Geology (Either Term). Warren O. Thompson
Advanced Field Geology (Second Term). William D. Thornbury
Geography of North America (Second Term). Assistant Professor Ralph H. Brown
Geographic Influences in American History (Either Term). Assistant Professor Ralph H Brown
Climatology (Either Term). William D. Thornbury
Field Course in Geographic Interpretation (Second Term). Harold A. Hoffmeister
Principles of Human Geography (Second Term). Assistant Professor Ralph H. Brown
Graphics and Cartography (First Term). William D. Thornbury
Geography of the Great Plains (First Term). Assistant Professor Ralph H. Brown
Advanced Physiography (First Term). William D. Thornbury
Geography of Latin America (First Term). Assistant Professor Ralph H. Brown
Conservation of Natural Resources (First Term). Harold A. Hoffmeister.

Field Courses in Geology at Science Lodge, University Camp. Professor Walter E. McCourt, Professor Arthur B. Sperry, and Assistant Professor Carl Tolman. Headquarters are at Science Lodge adjoining the University Camp near the Continental Divide, about twenty-five miles from Boulder. The cost is $125 each term, including all expenses. Students desiring to register should consult with Professor W. E. McCourt, by mail or in person, before June 13 (Address, Washington University, St. Louis, Mo., until June 10, after that date, University of Colorado, Boulder). Applicants for the second term only should consult Professor McCourt before July 17. Courses are offered to three types of students: beginners, advanced, and graduate. The last five days of each term are devoted to a trip thru the Rocky Mountain National Park

Lewistown State Normal School, Lewiston, Idaho. June 4-August 3

Principles of Geography. Professor Ernest E. Holmes
The Teaching of Geography. Professor Ernest E. Holmes
Geography of Idaho. Professor Ernest E. Holmes

University of Chicago, Chicago, Ill. June 18-August 31

Ocean Trade and Transportation. Professor Colby
Introduction to the Teaching of Geography. Assistant Professor Parker
Geography of North America. Professor Colby
Conservation of Natural Resources. Professor Barrows
Curriculum Problems in Elementary Geography. Assistant Professor Parker
Economic Geography of Great Britain and Ireland. Professor Bryan
Historical Geography of the United States. Professor Barrows
Elements of Geography for Senior College Students (First Term). Assistant Professor Platt
Economic Geogrraphy for Senior College Students (Second Term). Associate Professor Whittlesey
Map Studies in the Geography of the British Isles. Professor Bryan
Field Geography (In Upper Lakes Region) (First Term). Associate Professor Whittlesey
Field Geography (In Mexico) (Second Term). Assistant Professor Platt
Research in Geography. Professor Barrows, Professor Colby, Associate Professor Whittlesey, Assistant Professor Platt
Dissertations in Geography. Professor Barrows, Professor Colby, Associate Professor Whittlesey, Assistant Professor Platt

Northern Illinois State Teachers' College, DeKalb, Ill. June 11-July 20; July 23-August 31

Elements of Geography. Wm. C. Gould and Mr. Carlson
Regional Geography. Wm. C. Gould and Mr. Carlson
Home Geography (First Term). Miss Nash
North America (First Term). Miss Nash
Illinois (First Term). Wm. C. Gould
Economic Geography (Second Term). Mr. Carlson
Geographic Influences on History (Second Term). Wm. C. Gould

Northwestern University, Evanston, Ill. June 25-August 18

Physiography and Geology. C. E. Needham
Industrial and Commercial Geography. Assistant Professor C. M. Zierer
Conservation of Natural Resources. Assistant Professor C. M. Zierer
Research. Professor U. S. Grant
Geographical and Geological Field Course in Europe. Assistant Professor H. B. Ward. Open to men and women who have completed an introductory college course in geography or geology;

also open to teachers. Leave New York June 27 and return to New York August 27. For information address the instructor.

Geological Field Course in the Lake Superior Region. Professor U. S. Grant and Assistant Professor J. T. Stark. Open to men who have completed at least a year's course in geology in college. There will be opportunity for advanced students to obtain material for masters' theses. The course begins about August 10 and lasts four weeks. For information address the instructors

Illinois State Normal University, Normal, Ill.

First Term, June 11-July 20

Physiography. Mabel P. Crompton and James R. Beck

Principles of Human Geography. Dr. Robert G. Buzzard, Robert W. Rucker, and Florence Blackburn

Grade Methods. Mabel R. Ripley and Florence Blackburn

Geography of North America. Mabel R. Ripley

Geography of South America. James R. Beck

Commercial and Industrial Geography. Robert W. Rucker

Influences of Geography on United States History. Dr. Robert G. Buzzard

Conservation of Natural Resources. Mabel P. Compton

Second Term, July 23-August 29

Principles of Human Geography. Ruth I. McDill and Robert W. Rucker

Grade Methods. Mabel R. Ripley

Geography of North America. Mabel R. Ripley

Geography of Europe. Ruth I. McDill

Commercial and Industrial Geography. Robert W. Rucker

Political Geography. Ella Beatrice Gibbs

Field Geography of Eastern United States. Dr. Robert G. Buzzard

A field study by motor-bus of the regional and industrial geography of eastern United States. Complete camping outfit carried, stopping at tourist camps. The route includes Indianapolis, Dayton, Wheeling, Frostburg, Washington, Annapolis, Baltimore, Philadelphia, Atlantic City, Trenton, Newark, New York, New Haven, Springfield, Worcester, Plymouth, Cape Cod, Boston, Gloucester, Fitchburg, Troy, Rochester, Niagara Falls, Port Huron, Detroit, Ann Arbor, South Bend, Michigan City, Joliet. Twenty-eight days, July 22-August 18. Two major credits when acceptable field report is made. Cost about $185

Indiana State Normal School, Terre Haute, Ind.

First Term, June 18-July 21

Commercial Geography. Lee Yoder

Elements of Geography. Lee Yoder

Problems in Geography. ————

Teaching of Geography. ————

(1) Travel-Study Course in Europe. W. L. Perkins

(2) Travel-Study Course in Northeastern United States. B. H. Schockel

(1) About 8 weeks by steamer, rail and motor-bus

(2) 34 days by motor-bus. Geography chiefly stressed, with considerable attention to physiography and history. Training in seeing geographic facts and relations; recording them in maps and notes; and interpreting them in reports. Entrance requirements same as residence courses. Estimated cost of the European trip, $750; Northeastern United States, $200

Second Term, July 23-August 25

North America. Lee Yoder

Elements of Geography. Lee Yoder

Problems in Geography. B. H. Schockel

Materials and Methods. B. H. Schockel

Clark University, Worcester, Mass. July 2-August 10

Geography of North America. Associate Professor Ekblaw

Geography of Asia. Assistant Professor Van Valkenburg

Geography of a World Cruise. Professor Ridgley

Economic Geography. Assistant Professor Van Valkenburg

Weather. Mr. Koeppe

Climates of the World. Mr. Koeppe

The Teaching of Geography. Assistant Professor McClellan

Laboratory Course in the Teaching of Geography. Assistant Professor McClellan

Geography in Education for Special Teachers. Professor Ridgley

Materials in Geography. Professor Ridgley and Mr. Belknap

Influences of Geographic Environment. Associate Professor Ekblaw

Field Work in Geography. Associate Professor Ekblaw
Graphics and Cartography. Mr. Burnham
Mathematical Geography. Mr. Burnham
Seminar in Geography. The Geography Staff
Research in Regional Geography. Associate Professor Ekblaw
Research in Climatology. Mr. Koeppe
Research in Economic Geography. Assistant Professor Van Valkenburg
Transcontinental Field Trip (July 2-August 24). Assistant Professor James
New York State Field Trip (August 11-24). Mr. Burnham
Dutch and Quaker Colonies, Field Trip (August 11-24). Professor Bye

University of Michigan, Ann Arbor, Mich. June 25-August 17
Elements of Geography. Assistant Professor S. D. Dodge
Geography of Commercial Production. Professor K. C. McMurry
Geography of North America. Professor K. C. McMurry
Geography of Europe. Assistant Professor S. D. Dodge
Research and Special Work in Regional Geography. Professor McMurry and Assistant Professor Dodge
Field Courses in Kentucky (June 19-July 25)
Field Course in Geography. Assistant Professor R. B. Hall
Advanced Field Course in Geography. Assistant Professor R. B. Hall

State Teachers' College, Mankato, Minn.
Elements of Geography. George J. Miller, Cora P. Sletten, and assistant
Europe and South America. Cora P. Sletten
North America. George J. Miller

University of Minnesota, Minneapolis, Minn.
First Term, June 15-July 28
Climatology. Professor D. H. Davis
Human Geography. Professor D. H. Davis
Field Course. Professor D. H. Davis
Geography of Commercial Production. Assistant Professor Richard Hartshorne
Geography of Europe. Assistant Professor Richard Hartshorne
Teachers' Course in Geography. Norah E. Zink

Second Term, July 28-September 1
Human Geography. Professor D. H. Davis
Geography of Asia. Professor D. H. Davis
Field Course. Professor D. H. Davis
Geography of Commercial Production. Professor Lewis F. Thomas
Geography of South America. Professor Lewis F. Thomas
Teachers' Course in Geography. Norah E. Zink
Field Course for both terms: A series of field excursions to points of local interest to illustrate adjustment of economic activities to the physical setting

Washington University, St. Louis, Mo. June 15-July 27
Regional Geography of Europe and Asia. Associate Professor Thomas
Commercial Geography. Associate Professor Thomas

University of Nebraska, Lincoln, Nebr.
First Term, June 4-July 13
Principles of Geography. Associate Professor Earl E. Lackey
Physiography. Esther S. Anderson
Geography of Nebraska. Esther S. Anderson
Geography of North America. Esther S. Anderson
Geography for High School Teachers. Associate Professor Earl E. Lackey
Geography in Elementary Education. Associate Professor Earl E. Lackey
Second Term, July 14-August 24
Principles of Geography. Professor Nels A. Bengtson
Regional Geography of Continents. Julia M. Shipman
Geography of Nebraska. Professor Nels A. Bengtson
Geography of Latin America. Professor Nels A. Bengtson
Geography of Europe. Julia M. Shipman
Geography in Elementary Education. Julia M. Shipman

Cornell University, Ithaca, N.Y. June 30-August 10
Physical Geography. Professor O. D. von Engeln
Industrial and Commercial Geography. Professsor Coller Cobb

Human Geography. Professor Coller Cobb
Aids to the Teaching of Elementary and High School Geography. Professor O. D. von Engeln
Geology. Professor J. P. Rowe
Mineral Resources. Professor J. P. Rowe
Historical Geology. Professor Henry Leighton
Physical Geography Laboratory. Elizabeth Baker
Geology Laboratory. Professor Henry Leighton and Assistant Professor M. H. Stow
Geography and Geology Field Course. Professors Leighton, von Engeln, Rowe, Assistant Professor Stow and Miss Baker

Excursions are made every Monday afternoon to points of interest in the immediate vicinity for field work. All day excursions are arranged for to Taughannock Falls and Gorge, Niagara Falls and Gorge, and Jamesville Lake.

Columbia University, New York City, N.Y. July 9-August 17
Economic Geography. Assistant Professor John E. Orchard
Physical Geography and its Economic Aspects. Professor Frank J. Wright
Geography of Asia. Assistant Professor Frederick J. Morris
Geography of North America. Professor Frank J. Wright
Geographic Sketching and Map Interpretation. Assistant Professor Frederick K. Morris
Mathematical Geography. Dr. Clement S. Brainin
Teaching Geography in Lower and Upper Grades. DeForest Stull
Essentials of Geography for Teachers. DeForest Stull
Field Work in Physiography (Southern Region). Professor Frank J. Wright

Southern Field Trip. Practical field work in physiography in one of the most typical non-glaciated areas of the eastern United States—a section thru Virginia and part of West Virginia, covering all the physiographic provinces east of the plains country of the central states, August 18-29 inclusive.

Ohio University, Athens, Ohio. June 18-August 17
Geography and Environment. Professor C. E. Cooper
Geography and Methods in Lower Grades. Associate Professor Jane K. Atwood
Geography and Methods in Upper Grades. Professor C. E. Cooper
Geography of Asia and Its Islands. Associate Professor Jane K. Atwood
Geographic Influences in American History. Associate Professor Jane K. Atwood
Geography of Ohio. Professor C. E. Cooper
Local field trips required with methods courses and the Geography of Ohio

Cleveland School of Education, Cleveland, Ohio. June 18-July 27
Principles of Elementary Geography. Esther Matchett
Conference in Teaching of Elementary Geography. Esther Matchett
Economic Geography. Villa B. Smith

Industrial Geography—Field Course. Villa B. Smith. For those who desire first-hand information concerning the great industries of a large city. Trips to mill or plant will give first-hand knowledge of each industry as to (a) site, (b) raw materials consumed, their source, value and influence, (c) tools and machines, (d) power, (e) labor, (f) processes, (g) products—number, value, preparation for market, (h) markets, (i) geographical and economic principles illustrated. Twenty-four field trips to typical industries, six class meetings.

Ohio State University, Columbus, Ohio. June 19-August 31
Principles of Geography (First Term). Professor F. A. Carlson
Economic Geography (Second Term). Professor Eugene Van Cleef
Principles of Geography. Professor F. A. Carlson and Professor Eugene Van Cleef
Economic and Social Geography of Europe. Professor Eugene Van Cleef
World Industries and Commerce. Professor F. A. Carlson

Oberlin College, Oberlin, Ohio. June 21-August 9
Geology and Physical Geography Field Course. Professor George D. Hubbard

Students participating in this course work from a camp near Narrows, Va., in the complexly folded and faulted Paleozoic rocks, live in tents, make topographic and geologic maps, structure sections, collect and study rocks and fossils, and write a report describing and discussing the geology of the area, under the personal supervision of one who has given such a course almost annually since 1911, and eight summers in this vicinity. No detailed work has ever been published on this area. Expenses including tuition, subsistence, and laboratory fees, but not transportation about $115.

University of Pennsylvania, Philadelphia, Penn. July 2-August 11
Introduction to Economic Geography. Dr. H. F. James
Geography of Eastern North America. Dr. H. F. James
Geography of Western North America. Dr. H. F. James
Weather, Climate and Man. Dr. Stephen S. Visher
Geography of Europe (graduates only). Dr. Stephen S. Visher

George Peabody College for Teachers, Nashville, Tenn. June 12-August 29
Major Industries. Mr. Switzer
Map Drawing. Mr. Lindsay
Advanced Physiography. Mr. Stoval
Climate and Man. Mr. Parkins
Conservation of Natural Resources. Mr. Stoval
Historical Geography. Miss Forest
Materials and Methods of Teaching Geography. Mr. Parkins
North America in Geologic Times. Mr. Stoval
Geography of North America. Mr. Switzer
Geography of South America. Mr. Kennamer
Geography of Europe. Mr. Switzer
Geography of World Problems. Mr. Parkins
Special Problems in Economic Geography. Mr. Switzer
Seminar in Geography (Thesis). Mr. Parkins

West Texas State Teachers College, Canyon, Texas. June 5-August 24
Principles of Human Geography. Professor Darthula Walker
Commercial and Industrial Geography. Professor Darthula Walker
Advanced Physiography. Professor Darthula Walker
Geography of Texas. Professor Darthula Walker
Geography of North America. Professor Darthula Walker

Sam Houston State Teachers College, Huntsville, Texas. June 4-August 25
Geography of the South. Professor Harriet Smith
Geography of Texas. Professor Harriet Smith
Economic Geography (First Unit). Professor Harriet Smith
World Problems. Professor Harriet Smith
College Physiography. Professor Harriet Smith
Historical Geography. Professor Harriet Smith
North America. Professor Harriet Smith

University of Washington, Seattle, Wash.
First Term, June 12-July 17
Principles of Economic Geography. Associate Professor George T. Renner
The Teaching of Human Geography in the Grades. Associate Professor George T. Renner
Common Minerals and Rocks. Assistant Professor Kenneth Landes
Second Term, July 18-August 22
Problems in Human Geography. Associate Professor George T. Renner.
The Teaching of Geography in the High School. Associate Professor George T. Renner.
Economic Geology. Assistant Professor Kenneth Landes
Travel Course (July 18-August 1). Dean Henry Landes
Two weeks in Yellowstone and Glacier National Parks

State Teachers College, Whitewater, Wis. June 18-July 28
Geography Methods (Primary and Grammar Grades). Florence Shattuck
Geography Methods (High School). H. O. Lathrop
Geography of North America. H. O. Lathrop
Problems in Political Geography. H. O. Lathrop
Rocky Mountain Field Course. W. C. Fischer
The Northern and Southern Rockies. The trip begins on or about July 6 and continues for two weeks. It covers approximately 2,200 miles by rail, 1,100 by auto, 85 on foot, and 22 by water. For information write W. C. Fischer, Whitewater, Wisconsin. Number limited to 30.

GEOGRAPHICAL PUBLICATIONS

Mendel E. Branom. **Geography Problem Projects.** Series I for Lower Grades. 59 pp., 28 maps. Series II for Upper Grades. 86 pp., 51 maps. Also published in loose-leaf form. A. J. Nystrom and Company, Chicago. 1927.

Much thought has been given of late to providing assimilative material in geography. It is generally conceded that no single textbook can furnish sufficient material to ensure familiarity with geographical terms or understanding of geographical concepts. It is further agreed that not all the additional material provided to meet this need should be in the form of supplementary books or reference matter. Some of it should furnish that opportunity for expression work which will give intensive experiences essential to understanding. That is to say, there is a felt need for carefully prepared studies that provide for assimilative practice as well as for wide reading.

Among contributors to this field have been D. C. Ridgely and his coworkers, with continental studies and reference notebooks containing map studies. The outline maps prepared by W. R. McConnell, of Miami, with specific directions for their use, have been helpful to many. Somewhat similar material for assimilative practice is provided in the Iroquois Geography Notebooks.

The most recent addition to this group is "Geography Problem Projects," by M. E. Branom. This appears in two series: Series One for lower grades, and Series Two for upper grades. In each are accurate, well selected outline maps which are to be used in recording facts, the data thus tabulated to become the integrating center for the discovery and interpretation of relationships.

In Series One, the problem projects include for each inhabited continent, a travel tour, a study of plant distribution, and of products. In Series Two, are studies on the distribution of population, on exports and imports, and on climatic factors. To quote from the preface, "A study of the distribution of population places before the pupil in a large way, the differences in environmental influences that condition man's opportunities; a study of exports and imports reveals the extent to which man has been able to minimize the influence of environmental differences thru redistribution of products; a study of climatic factors helps the student to understand the climatic background that influences the distribution and activities of man."

The author assumes that the recording of facts is not an end in itself, but a means to an end. If teacher and pupils see it in this light, such expression work becomes an aid in securing the adaptation desired. If, however, it becomes a mere performance and, as such, satisfies the child, there is little value in the work. Subordinated to the larger aim, these two books serve an excellent purpose in making knowledge definitive, and in formulating a situation from which problems may arise. One could wish that such material might be placed in the hands of every pupil in geography.

ROSE B. CLARK

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